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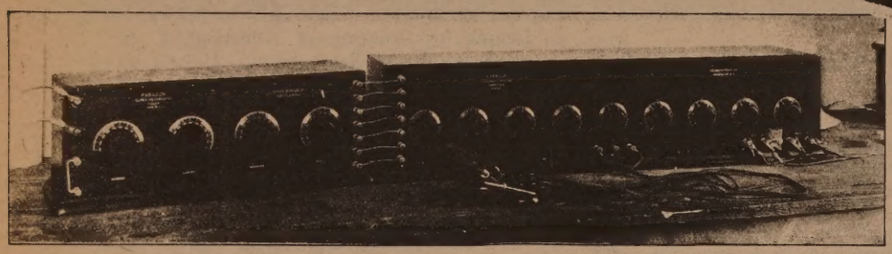
THE NEWSPAPER FOR
THE HOBBYIST OF VINTAGE
ELECTRONICS AND SOUND

THE HORN SPEAKER



PANEL VIEW OF THE SUPER-HETERODYNE RECEIVING SET
There is a separate rheostat provided for controlling the filament voltage of each tube

A Super-Sensitive Long-Range Receiver

Another Invention of Edwin H. Armstrong Which He Calls the "Rolls-Royce" Receiver

By PAUL F. GODLEY

ARMSTRONG, of radio receiver fame, called it a "Rolls-Royce." He named one after the "flivver," too. It was his single-tube super-regenerative receiver. But, notwithstanding the marvels which are to be unearthed from beneath the intricacies of the super-regenerative scheme, the real "bug" on radio reception methods — super-super-sensitive radio reception methods — has a very keen and long unsatisfied hankering to know all about that *most sensitive* receiver, the super-heterodyne.

That long-to-be-remembered sporting proposition so spectacular and successful in its outcome, the bridging of the Atlantic last winter by American amateurs, brought the super-heterodyne receiver into the limelight. Armstrong's phrase, "the Rolls-Royce receiver" — a phrase which he coined at the time of his disclosure of the super-regenerative receiver, added considerable prestige to that intriguing and mystifying word, "super-heterodyne."

And, when, in starting to learn about the super-heterodyne, the reader finds the statement that it is a method of radio-frequency amplification, he is not for one moment to jump to the conclusion that radio-frequency amplification by the super-heterodyne method is by any means an ordinary method. It is perhaps the simplest of receivers in operation. At the same time it is, no doubt, the most complicated of receivers to construct because of the care which needs to be taken with it.

Let it be said for the benefit of those few who may not yet have learned it, that the three-element vacuum tube as a detector of radio oscillations has an adjunct which is known as its "threshold value." To be specific, the three-element vacuum tube will not function as a detector until the incoming oscillatory currents are of a certain disappointingly large value. As a result of this defect (we are sorely tempted to call it that), many, many surging signal currents come to dwell in our antenna and receiver circuits, unannounced and unknown. Long ago their presence there had been suspected and, even in early times, methods which we would now consider quite crude were employed in an attempt to make their acquaintance. Primarily, most of these attempts had to do with amplifying the audible signal currents in the belief that after the weaker signals had operated the vacuum-tube detector, they were so nearly exhausted as to be below audibility. Further study disclosed the fallacy of this, and then it was that the great value of employing the three-element vacuum tube in their amplification prior to their detection was discovered.

The Super-Heterodyne

Here, again, we find the practical genius of Edwin H. Armstrong, inventor of regeneration and super-regeneration, applied to a receiver designed to help America terminate the World War. Again we find a war development of great peace-time value. For many years Armstrong and the author of this article have been close friends. It is not surprising, therefore, that Godley knew of the super-heterodyne receiver and used it in his tests at Ardrossan, Scotland, in December, 1921, when he proved its value by copying signals from about thirty amateur stations located in various sections of this country.—THE EDITOR.

Radio-frequency amplification has been used for several years, quite successfully, at long wavelengths where the frequency of oscillations is comparatively low. It was not until the World War that any great attention was given to finding out the reasons for the difficulties encountered when radio-frequency amplification was attempted on very short waves. Here the oscillatory currents are of comparatively high frequency. Up to this time, no readily practical method of securing radio-frequency amplification on wavelengths below about 400 meters had ever been devised. During the war, both the French and the British Army and Navy gave considerable attention to this phase of the art, for the reason that communication between airplanes, destroyers, and division headquarters had to be carried on through the medium of short-wave radio telegraphy and telephony. It took but a little while to discover that where the higher frequencies were to be handled in the amplifier, the distributed capacities inherent to all amplifier coils, circuit wiring, vacuum-tube receptacles, and the elements of the vacuum tubes themselves, offered a rather serious barrier to further progress. The reason for this is evident when it is understood that even extremely small capacities offer a rather low-resistance path to high-frequency oscillations. The higher the frequency of the oscillations, the lower the resistance of the path offered by any given capacity (condenser). The capacity between adjacent wires, metal fixtures, the elements of the tubes, terminals, and the layers of the windings upon the radio-frequency transformers, were sufficiently large to induce the currents to pass through them rather than through the paths laid out for them. Under these circumstances only a very small percentage of the currents actually passed through the transformers or the vacuum tubes to perform their functions there. Result, no amplification, although the amplifier tubes and their connected circuits either singly or in groups frequently set up oscillations among themselves, causing a further blocking of the amplifier or a great to-do of hissing and howling.

The British were the first to take the most obvious path, that of reducing to an irreducible minimum the capacities existing in the transformers, the connecting wires, and the vacuum tubes, as a result of which there was developed a class of vacuum tubes—very good ones, too—now quite generally used by British radio folks.

Armstrong, above mentioned, and even then well known, had none of these British tubes available. Yet, as a loyal American, and an important link in the communications system of our expeditionary forces, it behooved him to provide, with such American made equipment as was at hand, a means of performing this so urgently needed service. Perhaps his mental processes at that time were something like this.

"Radio-frequency amplification on long wavelengths is a practicable proposition. Radio-frequency amplification on very short

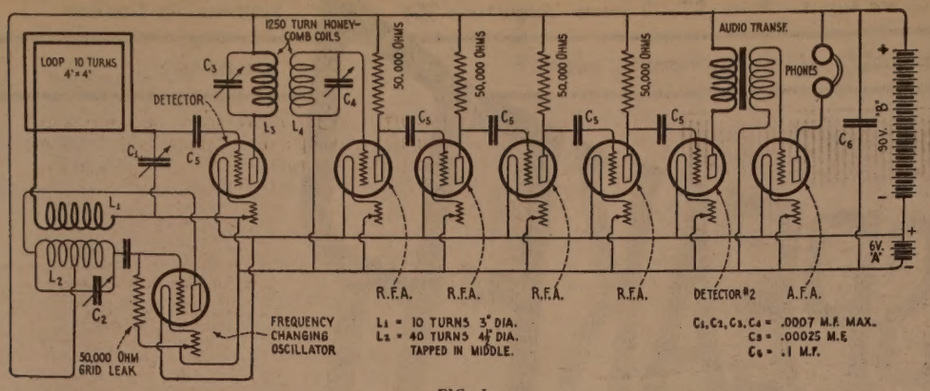


FIG. 1
The super-heterodyne circuit

wavelengths is not a practicable proposition with vacuum tubes and other material available. Why not, then, by virtue of a frequency changer, *change the wavelength from short to long prior to amplification; amplify it as a long-wave oscillation and detect it afterwards?"* Apparently that seemed reasonable enough and I doubt that it took him more than a few moments, not only to conceive the idea, but to lay his hands upon the medium which would enable him to make of the conception a practicality. At any rate, as nearly as available records show, it was but a very short time after his introduction to the problem before he actually had what he was pleased to call his super-heterodyne receiver, in action. It may be considered in one way unfortunate that before receivers of this type could be manufactured and put into service on the field, the armistice had been signed. But, as though the super-heterodyne were destined to assist in the making of history, it quickly found its way into the hands of a few fortunate, delighted, appreciative amateurs—created a worshipful enthusiasm—and was packed away to the dreary shores of Scotland. Here, during a short ten days' vigil, it showed its history-making calibre when it initiated international amateur radio communication.

As this is being written, considerable tinkering is being done with super-heterodyne receivers. The occasion for this tinkering is the transatlantic amateur tests of December, 1922. Before this reaches the reader's hands, there is little doubt but that the super-heterodyne will have shown again its great dependability as a receiver for sorting out, classifying, and recording extremely weak signals from great distances.

HOW IT WORKS

A THOROUGH understanding of the operation of the super-heterodyne is no difficult task. There are three actions which take place in the receiver in the following order: (1) a changing of the frequency of the incoming oscillation; (2) amplification of the oscillation at its new frequency; and (3) rectification (commonly considered as detection).

To the novice, the most mystifying function of the receiver combination is the frequency-changing action. This is simplicity itself. A detector tube has fed into it the incoming signal oscillations. This same detector has fed into it simultaneously oscillations which are generated at the receiving station by an oscillating vacuum-tube circuit. The circuits of the local vacuum-tube oscillator are so adjusted as to be either slightly lower or slightly higher in frequency than the incoming signal oscillations. The mixing of the two currents of different frequency in the detector tube gives rise to a new current of entirely different frequency in the output (plate) circuit of the detector tube which is known as the "beat-frequency current." By way of example in explaining the above, let us suppose that the detector circuit was tuned to receive signals on a wavelength of 200 meters. The oscillatory currents at this wavelength would be recurring

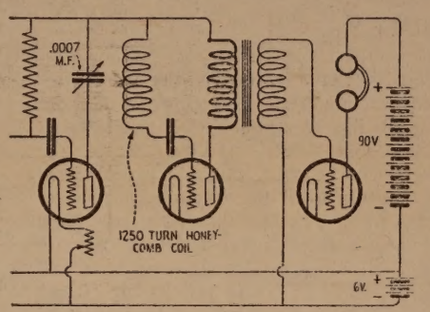


FIG. 2

at a frequency of 1,500,000 times per second. Let us now adjust the local oscillator circuits so as to produce a frequency of 1,400,000 cycles per second. Under these circumstances the two currents differing in frequency by 100,000 cycles per second would re-act one upon the other in the circuits of the detector, so as to produce the "beat frequency" above mentioned, which would be equal to the difference of the two initial frequencies. This frequency-changing method was devised by Professor R. A. Fessenden, an American, and is known as the heterodyne method. Now, a frequency of 100,000 cycles per second corresponds to a wavelength of 3,000 meters. As mentioned above, there is no great difficulty encountered when alternating currents having frequencies as low as 100,000 cycles per second are to be amplified. Three, five, seven or even nine stages of radio-frequency amplification may be used with complete success if a few necessary precautions are taken. Subsequent to this amplification, a rectifier tube (detector) receives the amplified energy, rectifies it, and, if desired, passes it on to a second amplifier in order that the volume of the now audible signals may be increased.

A review of the foregoing explanation and reference to Figure 1 will quickly show that in its usual form, the super-heterodyne receiver is exceedingly easy to tune. There are only two prime adjustments. One controls the wavelength of the "collector" or antenna circuit, while the other controls the wavelength (or frequency of oscillation) of the vacuum-tube oscillator circuit. Having set the one at the desired wavelength, it is only necessary to adjust the other until the difference of their frequencies is equivalent to that frequency for which the amplifier itself is suited. The tuning of the circuits in the *output* side of the first detector tube and the input side of the amplifier are set once and for all and no change need ever be made in them.

REFINEMENTS WHICH COUNT

IN FIGURE 2 it will be noticed that the output circuit of the amplifier is also tuned to the frequency of amplification. This serves in great measure to stabilize the action of a multi-stage amplifier of this type, as indicated by the fact that when resort is had to this expedient it becomes immediately possible to add two more stages of radio-frequency amplification before reactions in the amplifier circuits have reached the point where any great pains need to be taken to shield the various stages of the amplifier to prevent self-oscillation. Having guarded against self-oscillation of the amplifier, no matter by what method, advantage may be taken of the possibilities which lie in the regenerative action so closely allied with its tendency toward oscillations. Prior to the actual setting up of oscillations in any vacuum-tube circuit, considerable amplification of the signal which may be present results from the regenerative action inherent in the tendency toward oscillations. Control may be had over this tendency by utilizing a minute capacitive coupling between the output circuit of the last amplifier tube and the input circuit of the first amplifier tube. This usually takes the form of an exceedingly small, carefully shielded, variable condenser, as indicated in the figure above mentioned. Having taken these steps, the amplifier itself will be working at or very close to maximum efficiency.

The third and final step in bringing the super-heterodyne receiver up within striking distance of the theoretical ideal is to produce in the circuits of the first detector tube a regenerative action upon the initial currents (the incoming signal currents). Not until this has been attempted do the complications of the circuits

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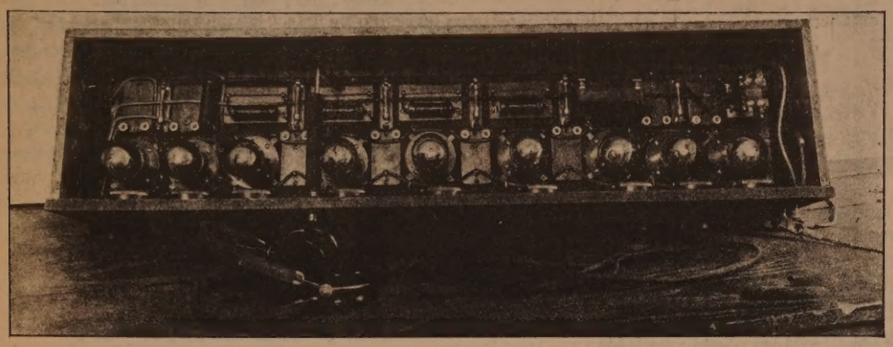
THE HORN SPEAKER
P.O. BOX 53012
DALLAS TX 75253

A Super-Sensitive Long-Range Receiver



THE SUPER-HETERODYNE RECEIVER
The walls of the cabinet are lined with copper sheeting, and the joints between sheets are carefully soldered

as a whole become apparent to the operator. But, to those who are skilled in the handling of regenerative circuits and multi-stage amplifiers this does not act as a deterrent. To the novice even, I should suggest that this method be tried, because a considerable and greatly-to-be-desired building up of the initial feeble currents results.

CONTINUOUS-WAVE RECEPTION

AS TREATED thus far, the super-heterodyne receiver will not act as a receiver of continuous-wave (undamped) signals except under certain conditions of advancement where regeneration of initial

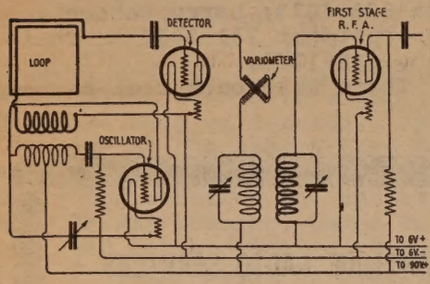


FIG. 3

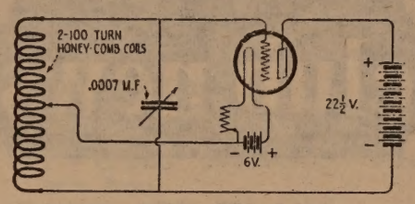


FIG. 4
An oscillator for continuous-wave reception

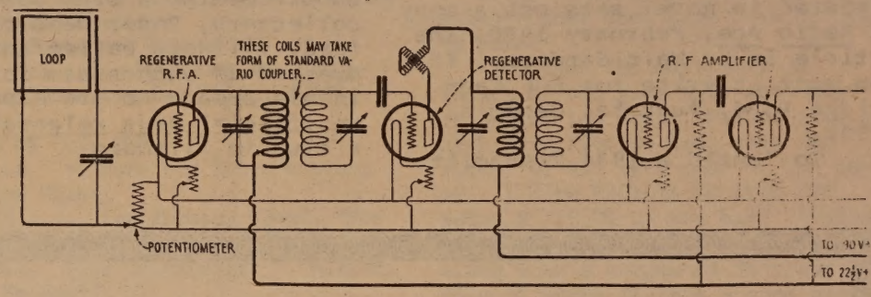


FIG. 5
The super-heterodyne circuit with tuned radio-frequency amplification

frequencies is being effected, and usually then in an unsatisfactory manner.

A simple and by far the most effective method of procuring audible reception of continuous-wave signals is to set up still another vacuum-tube oscillator (Fig. 4) *in the vicinity of* the amplifier circuits, this oscillator being so adjusted as to frequency that a second "beat frequency"—this time an audible one—is produced. In the case which we considered above, where the amplification frequency was 100,000 cycles, the practice would be to set the second oscillator so as to generate a frequency of 100,500 cycles. The "beat frequency" then produced would be an audible one, i.e., 500 cycles, which would give a note having a pitch just slightly lower than that heard when the middle C is struck on the piano. Having set this oscillator to produce the 500-cycle tone, it need not be changed, regardless of changes which may be made in the wavelength setting of the receiver. For, it will be remembered, the amplifier has passed to it only currents which have a frequency of 100,000 cycles.

In actual practice, it is found impractical to set the beat note oscillator at 100,500 cycles, because, unless great pains are taken to shield the beat-note oscillator carefully, the oscillations produced by it—even though they be very feeble ones—tend to paralyze the action of the amplifier. This problem may be easily solved by setting the oscillator at double the wavelength (half the frequency). There always exists, in the circuits of the oscillator, harmonics of the true oscillation. If the fundamental oscillation (100,500 cycles) is so strong as to paralyze the action of the amplifier, either the third or fifth harmonic will usually be found of proper strength to give the desired signal without paralysis of the amplifier tubes. The third harmonic is obtained by setting the oscillator at double the wavelength of amplification (6,000 meters or 500,000 cycles, approximately). The fifth harmonic is obtained by setting the oscillator at four times the frequency of amplification (12,000 meters or 250,000 cycles). Figure 3 shows this last arrangement. Attention is called to the fact that the beat note oscillator need be no nearer to the amplifier than about four to six feet.

Care in selecting and placing the tubes available for use in the super-heterodyne is of great importance. That great thing which is to be desired is *silence* in the amplifier. Noises due to tube faults are a great deterrent. Tubes which show inclination toward noisiness should be used in the latter stages of the amplifier if at all.

I have found many users of multi-stage amplifiers complaining about tube noises which were not tube noises at all. The noises which I have in mind were due to poor connections in the battery circuits. In fact, a poor connection at any point will cause noise, but it seems that the most common cause is the existence of carelessly made connections in the filament-lighting circuit or to the filament-lighting battery itself.

Further, it is frequently necessary to set an amplifier of this character on rubber cushions so that mechanical shocks due to movements within the room will not cause a "ringing" of the tube elements. Preferably, each tube should have its own individual shock absorber. This enables work upon the amplifier while in operation without great noise in the head-phones due to handling units in the circuit.

The final touch to be given to the super-heterodyne consists in adding to it a stage of tuned radio-frequency amplification. Of course this still further complicates tuning. The gain in signal strength is fairly well worth while, however, and the expedient will be adopted by all true experimenters. This arrangement is shown in Figure 5.

Having added this improvement, the user can be certain that he is in possession of the most sensitive radio receiver ever devised.

RADIO BROADCAST, February 1923

Suggested by Marcel Strudler, Tel-Aviv, Palestine

"There must be some leakage."

RADIO-CRAFT for JANUARY, 1948

FAVORITE ARTICLES

Articles appearing in rival or club periocicals that might be of interest to our readers.

"The Harko Senior" is an interesting article about the set that used Crosley parts and made by Tri-City Radio Electrical Supply Company written by Art Albion.

In the same issue is a good article on "How to Build a Good Box Loop" by Larry Babcock.

Both articles are in the N.F.W.A. Bulletin, Box 68, Station H, Buffalo, New York 14214.

In The Antique Radio Gazette there are two researched articles, one by Dick Schamberger, "Introduction to Federal Tel. and Tel. Wireless Units." The other article is "The Story of the Key" by Louise Ramsey Moreau. A name and address for the publication is: William E. Denk, 81 Steeplechase Road, Devon, PA 19333.

For those collectors interested in novel sets get a copy of Radio Age, February 1980. The article is by Walt Sanders. If you want it write to: 636 Cambridge Road, Augusta, Georgia 30909.

To "Build a 1934 Transmitter" you need to get a copy of The Old Timer's Bulletin. Another interesting article in the same December 1979 issue is: "Return With Us to Those Golden Days of Yesteryear." Write to; Dexter Deeley, 8 Briar Circle, Rochester, NY 14618.

If you have a favorite article, please let us know.

A good article about Ralph Muchow's famous museum in Elgin, Illinois is in the CHRS Journal for September 1979. For it write: California Historical Radio Society, 38262 Ballard Drive, Fremon, CA 94536.

club news

ILLINOIS CLUB

Although there is no official news from any organization about forming a club for radio collectors, Roger Rees of Rockford, Illinois called and expressed an enthusiasm for a club in his area. We are expecting an official news release about a club in Illinois.

Many collectors agree with Roger that an area as rich in radio history as Illinois needs not only a thriving club but also more research work on the pioneers who deserve more attention. Of course, the people who live in the Chicago area and visitors from other areas are fortunate to be able to visit Dr. Ralph Muchow's Historical Radio Museum.

ARKANSAS AND HOUSTON CLUB NEWS ON PAGE 12

INTERNATIONAL ANTIQUE RADIO MEET

The Niagra Frontier Wireless Association in association with the Wilson Historical Society will hold a radio collectors meet on April 12, 1980. The site of the meet is being held in Wilson, New York because of easy access from Canada. The place is located on Route 425 in Wilson, New York in the Old Railroad Terminal building. For more information write: N.F.W.A. Box 68, Buffalo, New York 14214 or call Dick Schamberger, president 836-4028; Larry Babcock, vice president 741-3082 or Chris Fandt, 488-1772.

There will be a flea market

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ANTIQUE RADIO TOPICS &
THE CLASSIC RADIO NEWSLETTER

for radio collectors to find radios and related items over 25 years old. There will be an old equipment contest with two categories, "Speakers" and "your Favorite Set." Mark Pommerenck will discuss his collection of juke boxes. Another feature will be Larry Babcock's talk about rejuvenating Ola's and 199's.

PUGET SOUND CLUB AND MUSEUM

In the afternoon of the third Sunday of each month the Puget Sound Antique Wireless Club meets in a museum at 175th and Linden Avenue North in Seattle, Washington. All of the members have some of their antiques on display there.

Woodrow Wells, a member of the club said, "We are always getting inquiries from the Canadian side of the border, and want to say that all those people are welcome to visit our meetings every third Sunday of the month."

Woodrow's address is: 8307 - 22nd Avenue nw Seattle, Washington 98117.

IHRS SPRING MEET

The Indiana Historical radio Society and the Antique Wireless Association will hold a Spring Regional Meet on Saturday, April 19, 1980 at the Auburn-Cord-Duesenberg Museum in Auburn, Indiana. Early registration and entertainment Friday evening. Large swap meet and two auctions on Saturday plus Saturday night banquet. Advance reservations required, $11. each including museum. $2. each for museum only. Contact Ross Smith, 1133 Strong, Elkhart, IN 46514 for reservations and program. Make checks to I.H.R.S.

"UNUSUAL SETS AT AUCTION"

Chevie Crandell, current chairman of the board for the Vintage Radio and Phonograph Society, said, "We are expecting many unusual sets because of a favorable response from the members at the February meeting."

The auction will start at 6:p.m. after a viewing time that will start at 4:30 p.m. Chevie said that the auction will be on March 15, 1980 at T.P&L. building on 519 Lockwood Drive in Richardson, Texas. Chevie's number is: 214 337-2823.

ANTIQUE WIRELESS ASSOCIATION
South East Conference
April 18-19, 1980
HEADQUARTERS
Holiday Inn Downtown
125 Calhoun at Meeting
(Block of rooms reserved for AWA
Contact directly)
Charleston, SC
HOST - WCSC Broadcast Museum

FRIDAY, APRIL 18
3 - 7 p.m. Registration & get together for early arrivals
7 - 11 p.m. Hospitality - Director's Room

SATURDAY, APRIL 19
8 a.m. - 12 noon Registration continues
9 a.m. - 12 N Flea Market (covered in case of rain)
Tour Broadcast Museum
10 - 11 a.m. Register for Equipment Contests, Lew Elias, WLDBT, chm.

LUNCH ON YOUR OWN
1 p.m. Welcome and Introductions - Patsy Hicken
1:15 p.m. Lou Moreau, W3WRE, "The Lightening Slingers"
2 p.m. Dick Schamberger - "History of Federal"
2:45 p.m. Bruce Kelly, W2ICE- ("This Business of Collecting")
3:30 p.m. Wes Chatellier, W5DPM, 1928 Amateur Station display and discussion
4:15 p.m. Robert Lozier - Restoration Techniques; discussion; Bring yours! Share!

BREAK
6:30 p.m. Socializing
7 p.m. Banquet (Buffet Style)- Charleston Room
8 p.m. M.C. - Wells Burton, NL4EE, Announcements and Awards
8:30 p.m. Edison Lohr - "Wells Fleet Station"
9:15 p.m. Drawing for door prizes - Dallas Swindal, KA4FVT

LADIES PROGRAM

Free tours of Historic Charleston and Middleton Garden. Sight-seeing and shopping in America's most historic city!

REGISTRATION

Registration (single).....$3.00
Saturday night banquet..... 8.00
Special Discount Husband and Wife Registration & Banquet.....20.00
Advance registration write: Wells Burton, NL4EE, P.O. Box 73, Summerville S. C. 29483.

letters

Dear Jim,

Am hearing more and more about THE HORN SPEAKER these days-so better get on the horn and ad another publication to my list-Hi.

Check enclosed-if there is any difference let me know as I am not up to date on what's going on there?

I see a February 1979 copy in my files - that must have been passed on here?

From what the boys tell me values of old gear this ares must be on the low side? Fellow came up here from Florida last week and showed me his haul made on the way up. A nice Radiola 20 with dud tubes @ $25.00 -- not bad? Atwater K's 20s still in the $35.00 bracket along with a couple of 35's and a pile of three dialers - none above the forty mark. (Some with tubes!)

Like all antiques - the market blows hot and cold--you see 'em and you don't -- right now --zilch!!

However I don't worry-as it's strictly the early gear for me-- and rarely does this stuff show anymore. Am thinking of trading in my rabbit's foot. Any surplus rabbit's your way? Used to be back in '26 when I traveled your territory.

OK-let's see what's new on the Horn!

Cheerio!!

P.S. We have a whopper of an ARCA meet coming up in May over at Mystic, Connecticut!!!

Melvin R. Comer
205 Roberts Road
Ardmore PA 19003

Dear Jim,

Please send me a current Horn Speaker, also send any information on the Philco Grandfather Clock with the radio in it that I have seen in my "Flick of the Switch".

Thank you,
Frank L. Pratt
730 Revere Ave.
Ft. Walton Beach,
Florida 32548

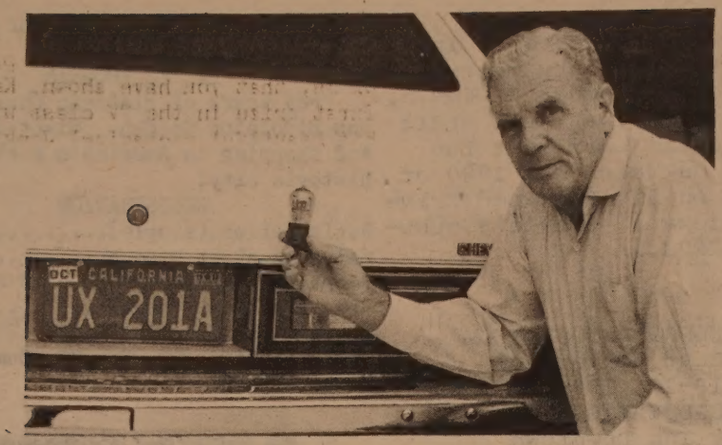
******REMEMBER BACK WHEN**********

The next meeting of the Dallas Antique Radio Club will be Monday, April 17, 1972 at 7:30 p.m. It will be held in the club room of the Green Valley Apartments, 111 East Spring Valley Rd. in Richardson.

Please bring an item of interest for display.

Refer to sketch below for location.

**********8*****member back then: John Rawlins, Mesquite*



Dear Jim:

I have been a subscriber to The Horn Speaker for some years now and will continue to keep renewing because I believe your publication is one of the best in the field, if for no other reason than the large amount of ads run each issue.

I guess we all like to see ourselves in print and also like to meet new collectors and be identified as collectors.

The enclosed picture shows my new California auto plates and yours truly. I know that these plates are the only ones in California, and may be nationally. If you want to print the picture, you have my permission, then we may find out that there are other collectors with collector oriented auto plates, or maybe they will start a trend in other states, who knows?

Kindest regards,
Bob Herbig
4178 Chasin St.
Oceanside CA 92054

Jim:

Here's $10.00 for a years first class subscription to "Horn Speaker" Always enjoy reading your publication, the pot pourri of the radio-phono collectors required reading. The "Horn Speaker" "Mart" has brought me results each time I've advertised. Keep up the good work, Jim.

Wallace Geary
209 W. Saunders
Mt. Pleasant IA 52641

Dear Horn:

I have recently purchased a Sparton Visionola (pg 175 "Flick of the Switch"). I would like information on the unique instruments if any is available. A friend of mine found one last summer that has a Colombia Radio installed. It must be factory as the owners manual shows the Colombia. Mine has been changed over in the late '30's and I would like to find an original radio and drawer for it. I also would like information on films and records for this thing. It takes the old type 16" 33-1/3 RPM records for the sound which is mechanically synchronized with a 400' reel of film Is Sparton still in business? Address?

Waiting and Anxious,
Pete Griffen
Box 403
San Rafael CA 94902
Ph: 415 454-0734

Jim,

Like the "Horn Speaker" very much and look forward to its arrival each month. Here is my renewal for another year, plus a small ad. Would you tell me what the long pipes were running off the generator in the October issue, front page? Were these DC lines or field coils or what?

73'
Bill Key
625 Whitman St.
R.F.D.
Hanson MA 02341

EDITOR....I need help about the long pipes. They look like conduits.

Dear Jim,

I can't imagine why mail wouldn't be getting to us here in Mankato because 909 Mulberry St. is the correct street address.

Well, while I have your attention there are several questions I have which you might be able to answer for me. Do you happen to know of anyone who has a complete and operable DeForest D-7 radio? I picked one up at an auction and would like to acquire a schematic, a photo of the loop antenna, w/measurements, the type of tube this set was originally sold with, particulary DeForest tube #'s. another item purchased at the same auction was a Western Electric 7A amplifier. Again I would like to locate someone with a complete and operable unit or at least knowledge of them. The 216A tubes are missing and I'm curious to know if I can use 112A's instead or what other tubes would work well. The capacitor appears to be bad (open) but I have no idea of its value. We also need to know if we can hook up a N.O.S Federal microphone to the input and use the unit as a public address system (with a 1921 Western Electric speaker) when our local museum and historical society has some of its summer functions. Maybe my questions seem a bit dumb, but I have no formal training in electronics of any sort and have been teaching myself slowly over the past few years. I've also acquired a Sleeper Monotrol Duplex (4-01As) complete with loop antenna and would like some information on it. I will be greatful for any help you can give me.

Harley C. Goff
909 Mulberry St.
Mankato MN 56001

Hi! Jim:

Enclosed is $20.00 for a 2 year renewal for my first class subscription.

A very fine publication, I enjoy the articles, and have had very good luck buying from your want ads. Keep up the good work.

73
Pat Stewart
1404 Ruth
Walla Walla WA 99362

Dear Jim:

I enclose a check for $5.50. Please continue my subscription for another year.

I enjoy "The Horn Speaker" very much especially someone's find of the month.

We have several big flea markets here but old radios are usually very scarce. I did find an old Western Electric speaker at the last flea market. The cone was gone though. Hope I can make one.

Keep up the good work on "The Horn Speaker".

Regards,
Willis A. Rudolph
5608 Elmhurst
Memphis TN 38118

The Horn Speaker
Box 53012
Dallas, Tex 75253

I am enclosing check for $5.50 in payment of subscription for 1980.

I want to say a few words on behalf of the Puget Sound Antique Wireless Club, which is now approximately 3 yrs. old. Have about 25 members living from Bellingham, Wa. to the south area of Puget Sound.

We meet the third Sunday P.M. of each month in an older school building at 175th & Linden Ave. North, Seattle, Wa. It is now a museum and all members have some of their antiques on display there.

We are always getting inquiries from the Canadian side of the border, and want to say that all those people are welcome to visit our meetings every third Sunday of the month. Dues are now $12.00 per year for

membership.

I certainly enjoy receiving the Horn Speaker each month and just keep up the good work you are doing.

An educational talk is always scheduled by one of the members after the business meeting. Hope that you can print a few words in the monthly paper about the club here in Puget Sound area.

Thanks and good printing.

Yours truly,
Woodrow Wells, member of
Puget Sound Antique Wireless Club.
8307 - 22nd Ave NW
Seattle WA 98117

EDITOR.....We are always glad to get news from the Puget Sound Antique Wireless Club.

Dear Jim,

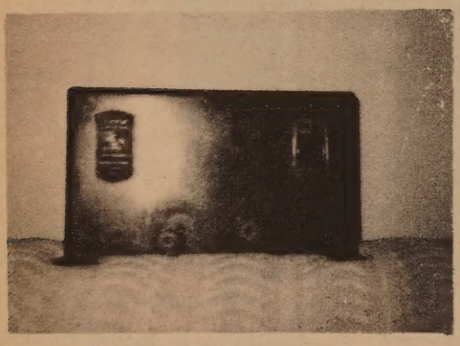
Please find enclosed cheque $5.50 for another year subscription.

I enjoy reading the Horn Speaker very much indeed, and the information there-in contained showing the trend in the estimation of different commodities are most invaluable to French Collectors.

Through the ads, I have now two excellent correspondents who are: John H. Caperton II and Daniel J. Gaidosz W1LFU.

Again all my most hearty congratulations and keep up the FB work.

Best regards,
Jacques Baume F3WL
25, Ave., Nicolas II
78600 Maisons-Laffitte
Les Yvelines France



Dear Jim:

Enjoy the "Horn Speaker" very much and save every issue.

I wonder if any one can help me identify the old radio by the pictures I am enclosing.

Data:
"Victor Little Six"
Victor Radio
His Masters Voice
Limited Monteal
Licensed for Radio Amatuer and experimental use only.
6 201 A tubes
1 12 A tube

A license was issued for its use by the Canadian Gov't.

Thanks,
L. E. Orluske
9131 Russell Ave. So
Mpls., MN 55431

Dear Jim:

Thanks for the reminder.

Jim, if you have interest you can again mention the Roaring 20's - It is the only "free" publication that I know of - 22 issues in last five years - next year is 6th year of distribution.

Dec. CQ carried a 6 page article by me on horn speakers. You may want to alert readers to a fairly thorough article on freq. responses, resonances, etc. on horn speakers of the 20's.

I've now identified over 240 mfgs. of horn speakers in the 20's; - AWA will carry an article in March. I'll be happy to help any reader identify his unknown horn speaker if he'll give me a description and SASE.

Sincerely,
Floyd A. Paul
1545 Raymond
Glendale CA 91201

Dear Jim,

I have just acquired a radio with no identification of any kind on it. Perhaps you, or one of the readers could identify it for me. It has 5 tubes, One 80, 6C6-6C5 tubes. Also has a map of the world on the dial.

Also have just acquired a W.C. Grunow console model 1191. Can't seem to find it in any of my books. Plenty of Grigsby Grunow, but no just plain Grunow. What year is it?

Respectfully,
George Friedrich
Rt. 1, Box 85
Custer WI 54423

EDITOR...Photo of unknown next month.

Dear Jim,

Our club, The Niagara Frontier Wireless Association (NFWA) really feels honored that you gave our club your full front page two months in a row! First was the November 1979 issue with the nice photograph of Harry Houck attending our summer meet. Next was the December 1979 issue with the article about Armstrong written by Felicia Kruezer. She is an officer and board member in our club.

Actually these two topics are connected, Felicia gave her talk at our last summer meet. Harry Houck heard that we were having a meet all on Armstrong and that is one reason why he came up from Florida to attend.

Our club continues to grow stronger and larger. Our membership is now about 100 people.

May I make a correction to your October 1979 Horn Speaker? The photo caption in the upper left corner of page 5 states, "Ken McIntosh" gave the talk on early TV at the last summer ARCA meet in Elgin, Ill. Actually I gave the talk and it is my stuff and picture of me, that you have shown. Ken won first prize in the TV class with his beautiful mechanical Jenkins Radiovison.

Jim, the Horn Speaker is doing such a nice job of reporting on club activities that I thought you might be willing to publish some information about our next two meets. I have enclosed a separate flyer describing our spring meet. It will be April 12, 1980 at the Wilson Historical Society Museum in Wilson, New York.

Our main speaker will be Mark Pommereck. He will talk about early juke boxes. I don't know if he will bring his entire collection with him but I bet he gives a very interesting talk!

I am the second speaker and plan to discuss the old tube rejuvenators. Many of the old tubes such as O1A's and 199's lose emission but the filament is still good. Rejuvenators will restore such tubes to good condition. You lose a few tubes in the process but so what if they were no good when you started? The audience will learn how to build and use a rejuvenator.

Our contest will have two topics. One is "speakers", the other is "your favorite set".

We picked the Wilson, N.Y. site for this meet because it is convenient to Canada and we are inviting our Canadian collector friends from the Canadian Vintage Wireless club. This will be an International meet. Also the museum in Wilson has a very nice collection of Niagara Frontier and local Wilson primitives and other antiques. Museum personnel will be in attendance to show their displays to spouses or anyone not wanting to attend the radio meet. There is a nice collection of hand made quilts and an exhibit of antique barbering and hair styling equipment.

L. F. Babcock
8095 Centre Lane
E. Amherst NY 14051

Dear Jim,

Enclosed is my check for $11.00, please add two years to my subscription.

I'm restoring a Federal 61 and need variocoupler switch points & stops. Also small internal parts. I would appreciate any help from readers.

I have a Daven resistance coupled amplifier with original tubes, instructions & most of the original box to trade for a Federal 61 junker works with a few good internal parts.

Thank you,
Wayne Wright
Rt. 4, Box 220
Bluefield W VA 24701

Dear Sirs:

I would appreciate very much your assistance with regards my inquiry of interest as concerns the entries of Mr. Kenneth McIntosh per "vintage" television in the October 1979 issue of The Horn Speaker.

Mention of his interesting program about early television has prompted my desire to inquire of him on his (?) Jenkins scanning discs (receiver?) in particular, as I myself have much interest in vintage television circa 1928 - 32.

Could you possibly provide me with his complete address at present? I would imagine that his research on television must cover all that has taken place since the earliest experimental work by European individuals as are read of in the various books on the subject, of which I presently own a number from the 1920's and thirties.

There are several radio collectors in the U.S.A. who have had the good fortune of finding early Baird and Jenkins "Televisor" in good condition, along with the Television lamps and scanning discs. So far my single "vintage" component is a Daven 3 stage R/C video amplifier to use with a tuner. Tubes are (2) 01A and a single 71A.

So, will indeed welcome your assistance on address, hope to correspond most satisfactorily with Mr. McIntosh.

Yours truly,
D'Arcy Brownrigg
Chelsen, Quebec
JOX 1NO Canada

EDITOR....I. F. Babcock, 8095 Centre Lane, E. Amherst NY 14051, actually gave the television talk at Elgin, Illinois.

Bing Crosby

Arthur Godfrey

1980 OLDE TYME RADIO SPECIALS

ELECTROLYTICS F.P. TYPE

Cap In MFD	Working Volts	PRICE
40X40	450V	$1.00 EA
80X100X40	150V	
50X40X40	250V	
20X20X20	200V	
30X20X20	450V	

BROWN SILK TYPE POWER CORD .25/FT

OLDE TYME TEST EQUIPMENT WRITE US

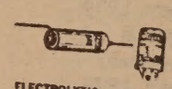
- OLDE TYME SINGLE CONDUCTOR CLOTH INSULATED WIRE. ASSORTED COLORS .12/ft
- OLDE TYME BAKELITE BINDING POSTS (SINGLES) .50EA OR 3/$1.00
- OLDE TYME BAKELITE BINDING POSTS (TRIPLES) $1.00 EA OR 3/2.50
- OLDE TYME RADIO PANEL LAMPS 2.5V, 3.8V, 6.3V SCREW BASE OR BAYONNETTE STATE YOUR NEEDS
- INTERSTAGE & OUTPUT TRANSFORMERS $4.00 EA
- OLDE TYME PORTABLE CABINET HARDWARE WRITE

TUBES - FROM THE '20's, '30's, '40's & '50's USED & BRAND NEW MOST TYPES

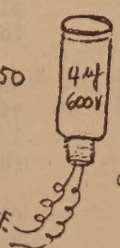
ALL TUBES TESTED

{USED} WRITE FOR QUOTE
{NEW}

COILS. All types, TV, Radio, Multiplex, Transistors, FM Price $1.75 EA



ELECTROLYTIC CONDENSERS. F.P. types, tubular types, single and multiple sections. Price $1.00 EA



4Mf 600V

OLDE TYME SCREW BASE CAPACITORS POPULAR MFR $2.00 EA

SPECIAL EXACT REPLACEMENT RADIOLA II AND III LEATHER HANDLES ONLY $4.50

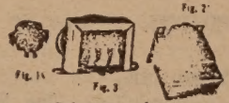
ANTIQUE HEADPHONES $3.50 PER PAIR

AUTO RADIO VIBRATORS $3.00EA

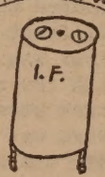
TRANSFORMERS

A large variety of transformers; most types in substantial quantities.

POWER TRANSFORMERS STANCOR PRI: 117VAC SEC:
1) 350-0-350V @ 70MA.
2) 5.0V @ 2.0A
3) 6.3V @ 2.0A
OTHERS



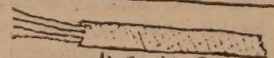
PRICE $1.50EA BRAND NEW



BRAND NEW I.F. TRANSFORMERS 175KC AND OTHER POPULAR FREQUENCIES $2.50EA

OSC. COILS 175KC AND OTHER POPULAR FREQUENCIES $2.00EA

OLDE TYME RADIO BATTERY CABLE



4-CONDUCTOR BROWN-ALL CLOTH ATWATER KENT STYLE .75 PER FT

RESISTOR LINE CORD REPLACEMENT KITS FOR USE WITH SETS EMPLOYING 0.3A TUBES (6A7, 6D6, 75, 43, 2525 ETC)

MODEL
RLC-1 4 TUBE SETS $3.50
RLC-2 5 TUBE SETS 4.50

FOR OTHER COMBINATIONS PLEASE WRITE FOR DETAILS

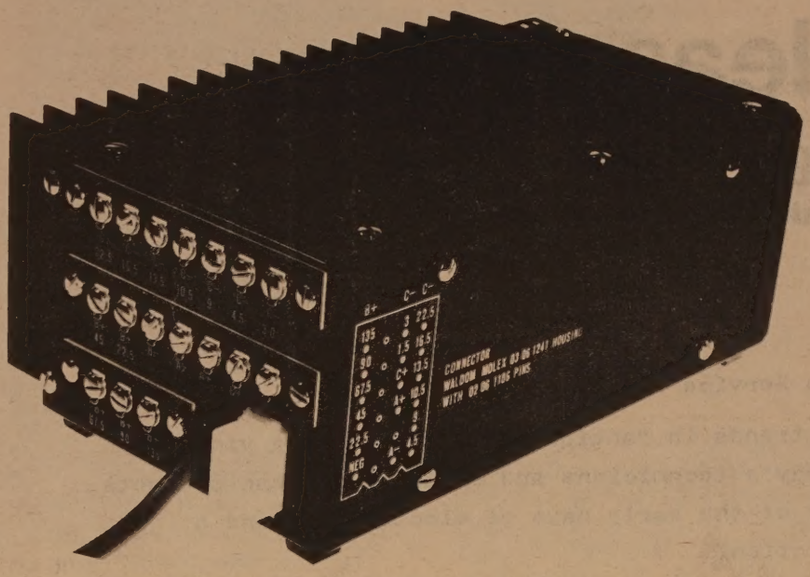
6-CONDUCTOR BROWN-ALL CLOTH ATWATER KENT STYLE $1.00 PER FT

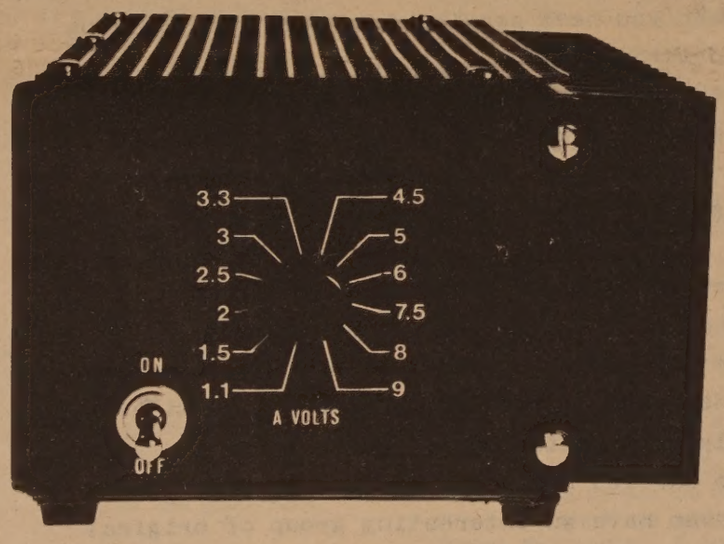
PLACE YOUR ORDER NOW

ANY SCHMATIC FOR SETS MANUFACTURE FROM 1920 THRU 1940 $1.50

ORDER FROM:
OLDE TYME RADIO CO.
2145 LYTTONSVILLE RD.
SILVER SPRING, MD. 20910
PHONE: 301 585 8776
PRICES DO NOT INCLUDE SHIPPING & HANDLING CHG.

the ANTIQUE APPARATUS CO.





H-10A POWER SUPPLY

Our New Power Supply At Last Year's Prices

The new H-10A has arrived. A premium quality power supply made of specially designed high quality components (no surplus or used parts).

And it's not being assembled in someone's garage. The H-10A has been contracted by a top-rate manufacturer who builds power supplies primarily for the laser industry. Thus it is fully warranteed for a full year.

NEW! "Molex plug" has been added for easier operation of your radios.

The Model H-10A is a premium quality regulated power supply. Very compact and highly engineered, it is designed to power over 99% of all battery radios manufactured between 1920 and the end of the vacuum tube era around 1960.

5 Amps of Power! More than twice the output of any other power supply on the market.

And no other power supply offers as many features or regulated outputs as the H-10A.

There are three independent, electrically isolated, regulated power supplies. The "A" supply provides 12 switched outputs between 1.1 and 9V. The "B" supply can deliver up to 5 *simultaneous* regulated outputs. The "C" supply can deliver up to *8 simultaneous* outputs. All outputs feature electronic short circuit protection.

Order now and save! Introductory price **$149.95** including postage in USA.

Offer Good For A Limited Time Only.

H-10A SPECIFICATIONS

Input voltages	117V AC, 50-60HZ, 80W maximum. 1.1, 1.5, 2.0, 2.5, 3, 3.5, 4.5, 5, 6, 7.5, 8, 9
"A" Output	Single output switch selected, short circuit protected, ripple less than 2.5 millivolts RMS @ 5V and 5A, regulation 0 to full load .02% @ 5V voltage tolerance 5%, overload protection. Using the 1.1V, 3.3V and 5.0V output, allow operation of appropriate tubes with no danger of burn-out from improper filament rheostat adjustment.
"B" Output	22.5V, 45V, 67.5V, 90V and 135V may be used in any combination with a maximum total output of 50mA. Ripple is less than five millivolts RMS @ 22.5V and 50mA to less than 14mV RMS @ 135V and 50mA, voltage tolerance 5%, voltage regulation 0-50mA 2.5% fold-back current limiting.
"C" Output	1.5, 3.0, 4.5, 9, 10.5, 13.5, 16.5 and 22.5V; 50 mA @ 22.5V, ripple less than one millivolts, voltage tolerance 5%, regulation 0.1% at 22.5V. All other voltage obtained by a 25mA resistive voltage divider. Overload protected.
Controls	Power switch, "A" voltage selector switch, LED pilot light.
Line Cord	Three-wire, 6 ft., heavy duty.
Size	3¾" H. x 5¼" W. x 9½" L. (includes controls).
Weight	5 lbs., 14 oz.
Limited Warranty	Warranty is limited to repair or replace, at our option of any defect in materials or workmanship for a period of one year. Warranty does not cover shipping costs.
Ordering Information	Include check or money order for $149.95 to The Antique Apparatus Co., 11650 Riverside Dr., No. Hollywood, CA 91602. We will pay for shipping in the USA. California residents add 6% sales tax. Canadian residents add $5.00 for postage.

11650 Riverside Dr. No. Hollywood, CA 91602 (213) 506-1169

News Release

ANTIQUE RADIO SERVICES

646 Kenilworth Terrace, Kenilworth, Illinois 60043

FOR IMMEDIATE RELEASE

New Source for Antique Radio Service Needs

One of the hottest new trends in "antiquing" is collecting vintage radios and TV sets. For today's technicians and engineers, these old sets provide a nostalgic reminder of the early days of electronics--and a practical hedge against inflation.

Problems arise, however, when you need service data for these antique sets. Most manuals are out of print and hard to find.

Antique Radio Services is the place to turn for help. This firm carries just about every radio and TV service manual ever published.

It was founded by Hartford Beitman, son of Supreme Publications' Morris Beitman--a well-known figure in electronics publishing for the past fifty years.

"Antique Radio Services used to only buy and sell antique radio equipment," says Hartford Beitman. "But we've had so many requests for early servicing materials that my father encouraged me to offer that, too. I probably have on hand more Rider manuals than any jobber had in Rider's heyday. I sell them individually or in sets."

Antique Radio Services also carries Sams' Photofacts, including folders now out of print. "We even have an interesting group of original factory manuals, some quite old and rare," adds Beitman.

A selection of early Supreme Publications manuals round out the catalog of servicing materials available.

If you're interested in antique radios or TV sets or early servicing manuals, you can write for a complete list of materials and sets available. The address is: Antique Radio Services, Attn. Hartford Beitman, 646 Kenilworth Terrace, Kenilworth, Illinois 60043.

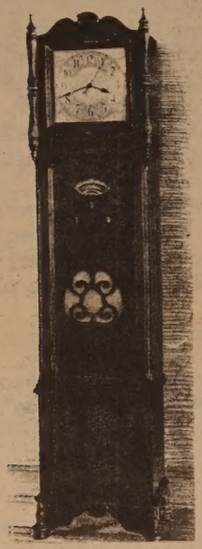
- end -

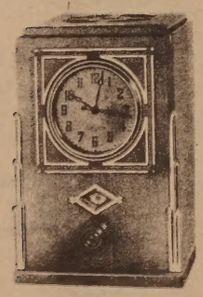
Wanted To Buy

Cash - Paid **AC RADIOS 1 or 100** **Cash - Paid**

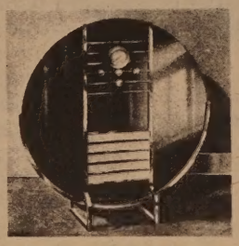
Will Pick-Up or Arrange Shipping

Radio - Clocks

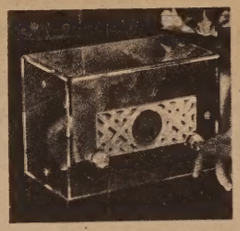




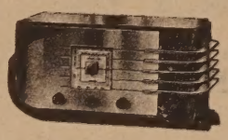
Mirror - Radios



Sparton 1936 Line

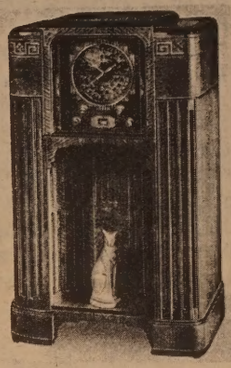


Gilfillan "Glass" Radio

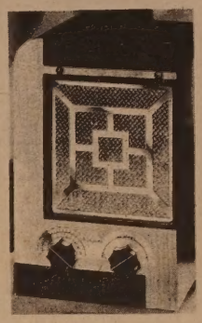


Model 557
5 Tubes

Zenith Stratosphere Radio #2501 PC



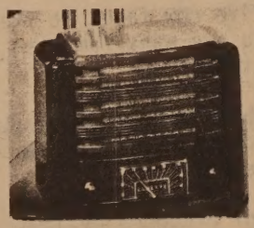
Chrome & Wood Radios



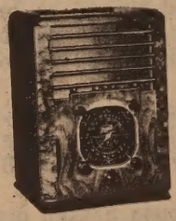
Majestic Model 49

Cathedral or Mantel Radios

Colored Radios



Large Zenith Table Radios



Dual-Tuner Radios

Nate Alexander, Jr.
P.O. Box 866
Milwaukee, Wisconsin 53201
1-414-276-6773

club news

ANNOUNCING ONE DAY(SATURDAY)VINTAGE RADIO CONTEST AND AUCTION, May 17, 1980

H.V.R.A. will sponsor a one day radio contest and auction on Saturday, May 17, 1980, from 9 a.m. to 5 p.m. It will be held in the Herman Brown Auditorium at the Museum of Natural Science in Houston. Judging of radios will take place in the morning and the auction in the afternoon.

Ribbons will be given in eleven contest divisions. A special award will be given for the Best of Contest. Membership in H.V.R.A. is required in order to enter radios in the contest. A fee of $2. will charged for each radio entered.

Entries will be judged in 4 areas:
(numbers refer to weight given each area)

1. RARITY
   - A. When made (age) 10
   - B. Quantity made (relative). 10
2. RESTORATION CRAFTSMANSHIP
   - A. Appearance of cabinet, panel, cables, knobs, hardware, nameplate 10
   - B. Comparative appearance . 10
   - C. Electrical appearance - original parts, rare tubes, wiring 10
   - D. How well does it work . . 20
3. SUPPORTIVE INFORMATION
   - A. original service manual, circuits, advertising, historical information, photographs & patent copies 15
   - B. Showmanship 5
4. JUDGES DISCRETION 10

Total 100

The Eleven Contest Divisions are:

1. Crystal receivers (broadcast type)
2. Regenerative receivers (broadcast type)
3. Battery powered TRF receivers (broadcast type)
4. A.C. powered TRF receivers (broadcast type)
5. Superhetrodyne receivers (broadcast types - table models)
6. Home brew, kits, replicas (all types --- transmitters & receivers)
7. Transmitters (manfactured, spark, tube, generator both amateur and commercial.)
8. Military receivers, transmitters, transceiver, and other equipment.
9. Ham & communication receivers
10. Other type receivers, amplifiers, or equipment
11. Console radios

Houston Vintage Radio Associatio
4215 Ravine Drive, Friendswood TX 77546.

THE ARKANSAS ANTIQUE RADIO CLUB NEWSLETTER

FEBRUARY 1980

Having experienced extremely mild weather for both of our last two meetings, this editor has concluded that Mother Nature is surely an antique radio buff. All we can do is hope her interest will continue throughout the remaining winter season.

We were pleasantly surprised to see no less than five new faces at the January meeting. At the same time, we were disappointed to see many familiar faces missing. Most were from out of town and is to be expected.

Paid membership now stands at twenty-two. New members since January 1st include: George Hutchinson, Tillar; Gene Baker, Springdale; Harvey Lovelace, Little Rock; Leland Smith, Jasper; and Eddie Blake, Mabelvale.

Tom Burgess
P. O. Box 4403
Little Rock, AR 72214

At our last meeting, M.L. Young passed out copies of proposed by-laws. Don't forget to bring those copies back this month, with any changes you recommend already written out. The latter is important so that we can keep things running smoothly and make this as painless a process as possible. Extra copies will be available at the meeting.

For those who did not make the last meeting, we were entertained by Nelson Foley of Little Rock. This very interesting man related his experiences in the radio industry from it's very infancy while growing up in the Northeast and along the Great Lakes, to his retirement as a consultant with a Little Rock electrical firm. The period along the way was paved with crystal radios and spark apparatus, radio repair, and research and development for Uncle Sam.

FOR SALE OR TRADE

RATES FOR THE HORN SPEAKER
One year.....$7.00
Two years.....$12.00
Special rates for one year
First class.....$12.00
Foreign air mail.$16.00

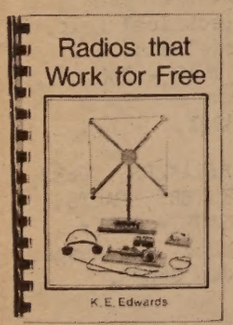
mart

Classified ad rate: 6¢ per word
Photo ads: $2.00 extra
Deadline: 20th of the preceding month.

REPAIRS MADE ON ANTIQUE CRANK-TYPE PHONOGRAPHS. Sound reproducers overhauled. Springs repaired. Also WANTED any parts to these phonographs.
John Nagy, Route 1, Box 135,
Walcott, Iowa 52773.
(319) 843-2108 evenings.

WANT TO repair sets that you cannot. Meticulous work always done. Hand-rubbed-varnish refinishing services available. Twenty years experience. WANT several RIDER manuals.
Maury Zivitz, Ph. D., 11503 Atwell Drive, Houston TX 77035.
(713) 723-4254, after 3.

Radios that Work for Free



"Radios that Work for Free" is a "How to" book for all ages. This is the most comprehensive work of its kind. Not only does the reader get a new hobby, but the skills necessary to continue in a science and art that needs revival. The projects can be built from recycled junk on the kitchen table by the novice with assured success. Years of research and countless hours of experimentation have been accumulated to provide this base for the beginner. You will fill many hours building, listening and experimenting with "Radios that Work for Free."

ORDER FORM

HOPE and ALLEN
Publishing Company
P. O. Box 535
Belmont, California 94002

Please place my order for____copies of "Radios that Work for Free" by K. E. Edwards at $5.00 per book. (CA. add 6% tax) Please add 50¢ for postage/shipping. Check must accompany order.

Ship to: _____

FOR SALE OR TRADE

ATTENTION TESLA ENTHUSIASTS!
Information on Tesla is difficult to obtain. Now there is a magazine for Tesla historians and electrical experimenters: "Tesla's Technology". Published 6 times yearly; 8½" X 11" nicely printed. Each issue contains; Feature article, reprint of old Tesla article, Tesla patent, Serial articles, notices. Subscription $10.00 yearly.
Tesla Research Society, 151 Grofftown Road, Lancaster PA 17602..

WANT TO SWAP 5 new Radiotron UV-199 tubes in original cartons (with factory warranty) for RIDER vols. II, III, IV, and XVI or make offer.
Maury Zivitz, 11503 Atwell, Houston, Texas 77035.

FOR SALE: $15.00 or best offer in 30 days V.2 of "Electricity and the Electric Telegraph", by George B. Prescott 1888. Five hundred pages more than 100 engraved illustrations of all kinds of telegraph equipment. Excellent condition.
Mark Evans, 683 W. Virginia St., #12, Tallahassee FL 32304. Shipping extra.

Since 1975 "Radio Age" magazine has featured articles on the history of early radio, restoration hints, biographical sketches of radio pioneers along with lots of photographs and classified ads. "Radio Age" is published monthly except July and August. Subscriptions are $10.50 for 1st class mailing and $8.50 for 2nd class mailing. Send check or money order to Radio Age, 636 Cambridge Rd., Augusta GA 30909. Sample $1.00.

FOR SALE: Philco Cathedral "chassis" without speakers for 20, 21, 60 & 70 models $50.00 each. Working order unknown. Majestic Super-B power supply $50.00. All items includes UPS shipping. Bob Westrick, 1733 F. Champlain Dr., Baltimore MD 21207. 301 265-8570.

FOR SALE: Diagrams radio 1935 - 1954 $1.25 each.
Victrola needles pac of 25 for 90¢.
Willis Housel, 1640 S. 38 Lincoln. Neb. 68506.

S. LEONARD

WANTED!

Horn phonographs music boxes crank organs, daguerreotypes, clocks, old mechanical toys, battery toys, Bought, sold, traded and serviced.

P.O. Box 127
Albertson, L.I.,
N.Y. 11507
U. S. A.
(516) 742-0979

FOR SALE OR TRADE

FOR SALE OR TRADE: A large accumulation of early battery radios, tubes, speakers, magazines and books, classic and novelty radios, short wave sets, phonographs, amplifiers, early high fidelity components, early television sets - etc. SASE Stan Jacobs, 1 Eighth St., Pelham, New York 10803.

ADAMS MORGAN (PARAGON) 1922 catalog reprint. VT control, crystal, radios, transmitter etc., 16 pages illustrated $2.95 ea. plus .50 handling mailing. Cecil Bounds, Pine Springs Rte., Carlsbad NM 88220.....

BACK ISSUES

ORDER NOW!

All 10 for 1073...$8.00
Single..$1.00
All 10 for 1974...$6.00
Single..75¢
All 10 for 1975...$5.00
Single..75¢
All 10 for 1976...$5.00
Single..75¢
All 10 for 1977...$5.00
Single..75¢
All 10 for 1978...$5.00
Single..75¢
Single issue for 1979....~~$1.00~~ 50¢

THE HORN SPEAKER
Box 53012
Dallas, Texas 75253

FOR SALE: RCA Victor RE-45 chassis, power supply, speaker, tubes excellent, sell all or part. Also Edison Amberla 30 plus 7 records. Mint condition $250. plus shipping. WANTED: Citizens Radio Call Book magazine volume 8 #2.
Herb Balmer, 610N 14th, Marysville, Kansas 66508. 913 562-5414.

FOR SALE: Radio literature, Sylvania, R.C.A., Philco, National Radio Institute, some dating from 1926 thru 1948. Large SASE.
Fothe, 10 Jackson St., Sloatsburg New York 10974.

FOR SALE OR TRADE: OLD RADIO BOOKS, MANY
OF SALE LISTS FOR $1.00. RADIOGRAPHICS
BOOKS, BOX 10482, CLEVELAND HEIGHTS, OH
44118.

RADIO SCHEMATICS 1925-1955 $1.25. GIVE
MAKE AND MODEL NUMBER. PHONOGRAPH
PARTS LIST 25 FOR 90 CENTS. WILLIS HOUSEL
1640 S. 38, LINCOLN NB 68506.

FOR SALE OR TRADE

FOR SALE: Cathedral, battery and AC radios from 1920's and 1930's. Please send large envelope with two stamps.
J. Albert Warren, Box 279, Church St Waverly PA 18471....

RADIO SCHEMATICS 1935 - 1955 $1.25. Give name and model number. Phonograph needles 25 for 90¢.
Willis Housel, 1640 S. 38, Lincoln NB 68506.

FOR SALE: Cathedrals, battery sets, early ACs, speakers, medical machines, etc. Rosenthal, 507 S. Maryland Ave., Wilm., DE 19804. Send SASE for list.

TUBES FOR OLD RADIOS, TV's. Most are $2.00 new, $1.00 used, plus postage, insurance. Tested before shipment. Good used UX201A's $4.50 each, plus postage. Send wants with SASE.
Rick Weibezahl, 305 Belvidere Ave., Washington N.J. 07882.

FOR SALE: DIAMOND PHONOGRAPH NEEDLES FOR ALL MAKES AND MODELS. $5.00 ea. PLEASE SEND OLD NEEDLE IF POSSIBLE, OR MAKE AND MODEL NUMBER OF PHONOGRAPH. STEEL NEEDLES ARE AVAILABLE IN PACKAGES OF 25 FOR $1.00. RECORD CLEANING CLOTHS WHICH CONTAIN AN ANTI-STATIC SOLUTION ARE AVAILABLE FOR $1.25 ea. ALL ITEMS ARE POSTPAID. ORDERS TO: KEITH ELECTRONICS, 209 BELLEFONTE AVE., LOCK HAVEN PA 17745. ALL NEEDLES CARRY A ONE YEAR FREE REPLACEMENT GUARANTEE. SEND YOUR ORDER TODAY.

FOR SALE OR TRADE: OLD RADIO BOOKS, next 5 sales lists for $1.00. Radiographics Books, Box 18492, Cleveland Heights, Ohio 44118.....

SELL-radio catalogs 1925 to 1935 SASE. Floyd A. Paul, 1545 Raymond, Glendale CA 91201.

FOR SALE: 1924 Zenith Super VIII $625. Zenith Cathedral $375. Atwater Kent Cathedral $250. RCA Tumbstone $50. Old crystal set and headphones $60. Miller radio horn $45. Much more, send 5 stamps for lists. Charles, 925 Starlite, Grants Pass OR 97526. 503 476-1078.

FOR SALE OR TRADE

RADIOLA VIII console cabinet, stripped to refinish. Excellent condition. Also seperate Radiola VIII chassis, less tubes. Offer or trades. Baldwin head phones, broken green cord, excellent, $20. Also some E. H. Scott receivers, console cabinets, good condition, with tubes, not restored. Offer? Have bound copy 1916 Electronic Experimenter Jan-June, brown leather, mint. Offer?
S. A. Cisler, P.O. Box 1644, Louisville KY 40201. Mail only SASE.

FOR SALE: OLD RADIO'S, TUBES, HORNS, SPEAKERS, RADIO PAPER, TUBE TESTERS, PLUS MORE. LIST 1-80 50¢ PLUS LARGE SASE W/2-15¢ STAMPS.
KRANTZ, 100 OSAGE AVE., SOMERDALE N.J. 08083.

FOR SALE: AUTHENTIC REPLICAS: FRONT PLATES FOR AK VARIO COUPLERS, VARIOMETERS, TYPE 11 TUNER, DIALS, KNOBS, POINTERS, BINDING POST NUTS, PUSH BUTTONS, BELT DRIVE PULLEYS FOR AK AND MUCH MORE. SASE FOR LISTINGS.
K. PARRY, 17557 Horace, Granada Hills CA 91344.

Beautiful reproduction DeForest dealer sign in dark blue, light blue, white and orange colors. Professionally silk screened on 13" X 19" galvanized sheet metal stock. Sample color photo $1. refundable with purchase and return. Price is a modest $60. ppd.
Don Patterson, 636 Cambridge Road, Augusta GA 30909..

FOR SALE OR TRADE

FOR SALE: RIDER'S RADIO MANUALS
I thru XXI (21 volumes, xlnt)..$275
I thru XIX (19 volumes, xlnt)..$255
II thru XIV (13 volumes, gd)...$190
III thru XIV (11 vols, no XI)..$130
RIDER'S TV MANUALS: I, II, III, IV, V, VII & VIII (no VI, gd).....$150
Sets will not be broken. Postage of $1.50 per volume required, unless picked up.
C. Kirsten, 604 Fremont St., #1, South Pasadena CA 091030.
Ph. (213) 441-1710..

FOR SALE: MAGNAVOX AMPLIFIER, SPLITDORF R-500, DEFOREST D-10, HALLICRAFTER SX25, ZENITH TRANS-OCEANIC and others. Send SASE for list 80-1.
David McKenzie, 170 West 53rd St., Hialeah FL 33012.

Ryder's Radio volume 1 thru 16 complete & volume 1 thru 5 abridged 6, 7, 8, 14, 16, make offer.
Grebe Syncrophase MU-1 looks good, works great $100.00 or offer.
I need schematic for Supreme #385 tube tester & set analyser.
TRADE any above for 1, 2 or 3 tube sets or early superhets.
LOOKING especially for TriCity Radio Electric supply sets and literature to complete collection.
Paul Tegeler, 5030 Myrtle St., Lincoln NE 68506. 402 489-4892.

FOR SALE: 71-A tubes. Guaranteed new in original war surplus boxes. $5. each post paid. Will also trade equivalent worth for WD-11, WD-12, Raven or DeForest tubes in good working condition. C. Kirsten, 604 Fremont St., #1, South Pasadena CA 91030.

FOR SALE OR TRADE: Atwater Kent parts 1927 - 1930, technical help, early electrics specialists.
Vintage Radio Shop, 1419 - 8th St., Rockford IL 61104.
Telephone: 815 964 3221.

FOR SALE; RADIOS, SPEAKERS, TUBES, MAGAZINES, BOOKS, TESTERS, PARTS, Ask for list 1-80 SASE w/2-15¢ stamps and 50¢. Krantz, 100 Osage Ave., Somerdale N.J. 08083.

"Wanted: MILITARY RADIOS BEGINNING WITH THE LETTERS "SS" - (EXAMPLE SSTR-1); MILITARY RADIOS BUILT INSIDE COMMERCIAL STYLE SUITCASES; SMALL MILITARY RADIOS; RS-6. MELTON, Box 2037, OGDEN, UTAH - (801)-394-3290 ***

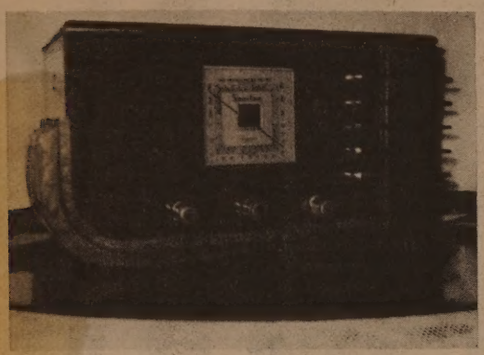
WANTED

WANTED: Information on manufacture of a plastic tortoise shell curved horn speaker, need base and reproducer, my horn is approximately 1½ feet tall. Also need reproducer for Music Master mahogony bell speaker, a base and reproducer for a black crinkled finish composition Montgomery Wards horn,

WANTED

a base and reproducer for Western Electric (circa 1921) black horn, and also an RCA 1923 reproducer & base model UZ-1320 or 1325.
Harley Goff, 909 Mulberry St., Mankato MN 56001, Pho: 507 345-7166.

WANTED: Early Crosley or Ace Box style crystal set model I (CR-1). If you have one but do not wish to sell, will pay for photos and drawings of same. Please write or call collect. David Brower, 236 Welsh, Camden SC 29020. (803) 432-8480.



COLORED MIRRORED RADIOS (blue, peach, green) wanted by obsessed collector. I'm also interested in colored mirrored clocks. Can use any unusual items from art deco period, such as chrome radios, weird colored plastic radios etc. Also wanted: Philco predicta television sets, coin operated radios.
Barbara Gorton, Box 1252, Dayton, Ohio 45401. (513)253-5073 evenings.
.....

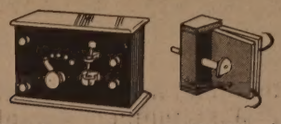
PHILCO model 90 Cathedral in good restorable condition. Want power supply cover for AK 40. Want wiper arm and good transformer for Radiola III. Gene densmore, 2125 Cambridge Drive, Tallahassee, FL 32304. Phone 904 576-2125

Early electrics and cathedrals (non working). Contact Vintage Radio Shop, 1419 - 8th St., Rockford, IL 61104. Phone: 815 964-3221 ..

WANTED: The microphone cable connector plug for WE-630 8-Ball, and the WE-639 Cardiod. Also need the Cannon connector plug for the RCA 50-A Inductor. Also want any early Broadcast Remote Amplifiers such as the NBC ND-10, RCA OP-5 and OP-6, WE-22A, WE-23A or other similar equipment. Still looking for Early RC Mics. for a museum. Ralph G. Maddox, Purgitsville WV 26852. Telephone: 304 289-3069.

WANTED: Zenith model 6S222 Black dial set or similar model. Also wanted pre-1930 Suitcase portables and Kellogg tube sets.
M. Rosenthal, 507 S. Maryland Ave., Wilmington DE 19804.

WANTED



HELP! Who has either of the items pictured above? Regardless of condition! (simple crystal receiver or wooden book tuner) Need badly.
Dave Crocker, Tavern Path, Plymouth MA 02360.

Would like to BUY or TRADE parts of AK model 5-9-10-12 Breadboard radios. I have fair supply of new in boxes, old tubes from 1:5 volts up. No WD11's. William Key, 625 Whitman St., R.F.D., Hanson, Mass. 02341. 617 447-2311.

WANTED; I will pay up to $1500.00 for an extra clean Scott Radio Labs (Scott Special) as per page 252 in "The Flick of the Switch." Prefer phone calls 815 964-8199-not collect. Roger Rees.
I will also pay top money for other rare radios especially Norden-Hauck Super Hets!!

WANTED: WIND POWERED ELECTRIC GENERATORS - parts or complete units, any condition. Prefer unit made by Jacobs Wind Electric Co. of Minneapolis (1930-1950) - 3 blade propeller, 32 or 110 volt D.C., 2000 - 3000 Watt units. Jacobs units are direct drive (no gear box) and weigh over 300 lbs. If you know of one, let me know - I can remove unit from the tower. Contact Richard Walter, 3415 Roosevelt Dr., Arlington, Texas 76016.

JOHN FIRTH CO. (FIRCO) is my specality. Looking for any equipment, parts, literature or information in any condition. Larry Wright, 131 Hilltop, Lake in the Hills IL 60102. Ph: 312 658-5993.

WANTED: CAR RADIOS 1929-1957 ORIGINAL TYPES. ALSO ANY PARTS, LITERATURE AND ASSOCIATED ITEMS, VIBRATORS, ANTENNAS ETC. CASH PAID. PLEASE PRICE AND DESCRIBE. MARVIN ROTH, 14500 LABELLE, OAK PARK, MICHIGAN 48237...

WANTED: Philco 90 cathedral, AK 20 cathedral and other AK cathedrals. Also need metal back-top for AA-1400 of a Radiola VI.
Charles Green, 5225 Broadway, Great Bend KS 67530. Ph: 316 793-7973.

WANTED: Philco 90 cathedral, AK 80 cathedral and other AK cathedrals. Also need metal b back-top for AA-1400 of a Radiola VI.
Charles Green, 5225 Broadway, Great Bend KS 67530.
316 793-7973.

WANTED

WANTED IN ANY CONDITION HALLICRAFTERS SUPERSKYRIDERS ANY MODEL ALSO PLUG IN COILS FOR PILOT SUPER WASP HAMMARLUND COMET PRO AND NATIONAL FB-7. ANY OLD HAM RECEIVERS ESPECIALLY FB-7 COMET PRO RME-69.
DAVE MEDLEY, 6621 DUFFIELD DRIVE, DALLAS TX 75248. Ph;(214) 386-3982..

WANTED: HALLICRAFTERS, MANUALS, BOOKS, CATALOGS, ADVERTISING ITEMS, ACCESSORIES, PARTS.
G. Barber, P.O. Box 31654, Aurora CO 80041....

WANT DeForest Spherical Audion or RJ4. Top for Atwater Kent 40. Swap top for Crosley Gembox. Also want any 1-P wireless receivers, WWI SCR-65 transmitter. Sell tubes DeForest 552 others. DeForest Diathermy others.
John V. Smith, 1924 Dolphin Blvd., St. Pete FL 33707.

WANTED AK BREADBOARDS and outside HORN PHONOGRAPHS. Pay $100 to $1000 each or trade groups of old radios for them.
Chuck, 925 Starlite, Grants Pass, OR 97526. Phone: 503 476-1078.

WANTED; WIRE RECORDERS: Armour, Brush, unusual types only. Also: VLF Signal Simulator, c.1968, pre-1940 TV literature.
H. Layer, AV-SFSU, 1600 Holloway, San Francisco CA 94132. . . . .

WANTED: Coin-operated phonographs, pre-1900 phonographs--any condition. Edison Opera, Idelia, AIVA, Concert, "M" electric. Zonophone, Queen Busy Bee. Edison Royal Purple cylinders. Quick reply. Describe and price. Send photo if possible.
Kaplan, 129 Howell St., Canandaigua New York 14424.

WANTED: Early enclosed tuning condenser, phone condenser, crystal or electrolytic detector, loop antenna.
Richard Groshong, 6604 Kent Drive, Cedar Rapids IA 52402.

WANTED: Crosley 50, 52 trirdyn, etc. Need transformer for Crosley 50-A. Looking for early Crosley service literature.
Jimmy Edington, 9947 Rocky Hollow, LaPorte TX 77571.
Phone: 713 471-3828.

WANTED: Tri-City Radio Corp., battery sets and any information pertaining thereto, and Crosley models V, VI, 50, XJ. Send description and price.
John Geyer, 8345 Mitze Way, Denver CO 80221.

WANTED: Rider's TV vols. 21 thru 24. Will pay cash or will trade for early Rider's TV volumes or Rider radio volumes.
Alan Smith, Stonehedge, Lincoln MA 01773. 617 259-9351

PUETT ELECTRONICS

PUBLISHERS OF P.O. BOX 28572 DALLAS TEXAS 75228

ANTIQUE RADIO TOPICS & THE CLASSIC RADIO NEWSLETTER

LIST NO. 18A

how to order:

(1) MAKE ALL CHECKS OR MONEY ORDERS PAYABLE TO PUETT ELECTRONICS. ALL PAYMENTS MUST BE IN U.S. FUNDS AND NEGOTIABLE WITHOUT PAYMENT OF A BANK COLLECTION FEE. MONEY ORDERS ISSUED BY POST OFFICES IN CERTAIN COUNTRIES (CANADA FOR EXAMPLE) ARE ACCEPTABLE IF THEY CAN BE CASHED IN A U.S. POST OFFICE.

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(3) TEXAS RESIDENTS ONLY - ADD 5% STATE SALES TAX.

(4) YOU CAN USE YOUR MASTER CHARGE OR VISA TO CHARGE YOUR PURCHASES. VISA CUSTOMERS SEND YOUR ACCOUNT NUMBER AND EXPIRATION DATE WITH YOUR ORDER. MASTER CHARGE CUSTOMERS SEND YOUR ACCOUNT NUMBER, YOUR INTERBANK NUMBER (above your name on your card) AND YOUR EXPIRATION DATE. WE MUST HAVE THIS INFORMATION IF YOU WISH TO CHARGE YOUR PURCHASES.

IN A HURRY! You may call J. W. F. Puett at his residence from 9:00 AM to 10:00 PM Central Standard or Central Standard Daylight Time. We will be glad to help you with free technical consultation 214 - 321-0927 or 327-8721.

NEW! JUST OUT!! ANTIQUE RADIO CATALOG No. 18A -- EVERYTHING FOR ANTIQUE RADIO RESTORATION

APPROXIMATELY 800 DIFFERENT TUBE TYPES IN STOCK!!
INTERSTAGE & POWER TRANSFORMERS, CAPACITORS, RESISTORS, DIAL LAMPS, ETC.
PUBLICATIONS, LISTS, BOOKS, SCHEMATIC DIAGRAMS, TECHNICAL DATA, INSTRUCTION MANUALS, ETC.
ORDER YOUR COPY TODAY --- ONLY $1.00 POSTPAID!!

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HERE ARE A FEW OF THE 800 DIFFERENT TYPES OFFERED IN OUR CATALOG No. 18A! ALL TUBES ARE GUARANTEED. SEE OUR POLICY STATED IN CATALOG.

				6J7	$5	7A6	$5	24A	$6	50A5	$4
				6K5	$4	7A7	$5	25L6	$4	50B5	$4
				6K6	$4	7A8	$5	25Z5	$4	50C5	$4
		2A6	$5	6K7	$5	7B5	$4	25Z6	$4	50L6	$4
		3Q5	$4	6K8	$5	7B6	$5	26	$7	51	$5
0D3	$3	3V4	$4	6L5	$5	7B7	$5	27	$5	55	$6
0Z4	$4	5AZ4	$6	6L6	$4	7B8	$5	30	$6	56	$4
1A7	$4	5U4	$3	6L7	$5	7C5	$4	32	$5	57	$4
1H5	$4	5Y3	$4	6Q7	$5	7C6	$5	34	$5	58	$5
1L6	$9	5Y4	$4	6SA7	$4	7C7	$5	35	$5	70L7	$6
1LA6	$5	5Z3	$4	6SB7	$4	7F8	$7	35A5	$5	71A	$8
1LB4	$5	6A7	$7	6SC7	$4	7G7	$5	35L6	$4	75	$5
1LD5	$5	6A8	$5	6SG7	$5	7H7	$5	35W4	$4	76	$4
1LE3	$5	6C5	$4	6SJ7	$4	7Y4	$5	35Y4	$5	77	$5
1LN5	$5	6C6	$5	6SK7	$4	10	$8	35Z5	$4	78	$5
1N5	$5	6D6	$5	6SL7	$4	12A7	$5	36	$5	79	$5
1R5	$3	6E5	$8	6SQ7	$4	12AT6	$3	37	$5	80	$4
1U4	$4	6F5	$5	6U5	$8	12AV6	$3	38	$4	81	$7
1U5	$4	6F6	$6	6U7	$6	12B7	$5	39	$4	83V	$4
1V	$6	6G5	$8	6V6	$3	12BA6	$3	40	$8	84	$4
2A3	$8	6H6	$3	6X5	$3	12BE6	$3	41	$5	85	$5
2A5	$5	6J5	$4	7A5	$4	12K7	$5	42	$5	89	$5
						12Q7	$5	43	$5	117L7	$6
						12AS7	$4	44	$4	117Z3	$4
						12SG7	$4	45	$7	117Z6	$5
						12SK7	$4	46	$5		
						12SQ7	$4	47	$8		
						14A7	$5	50	$8		

OLD TIME RADIO SHOWS ON CASSETTES

SEND ONE FIRST CLASS MAIL STAMP FOR OUR SHORT LIST OF PROGRAMS. HUNDREDS ARE LISTED IN OUR CATALOG No. 18A.

Amos & Andy, Fibber McGee & Molly, Inner Sanctum, etc.

THE ENCYCLOPEDIA OF ANTIQUE RADIO $7.95 POSTPAID
SIMILAR CONTENT, BUT COVERING SETS OTHER THAN THOSE INCLUDED IN Vintage Radio AND A Flick Of The Switch.

THE DIRECTORY OF ANTIQUE RADIO SERVICES $3.00 POSTPAID - SERVICES & SOURCES THROUGHOUT THE U.S.A.

BOOKS, BOOKLETS, LISTS & DATA

Booklets listed in (1) thru (5) below are $2. each, 3 for $5., 4 for $6. or 5 for $7.

(1) The Acquisition Of Antique Radios by J. W. F. Puett
(2) The Complete Restoration of Battery Powered Antique Radios by J. W. F. Puett
(3) The Complete Restoration of AC Powered Antique Radios by J. W. F. Puett
(4) When Was That Old Tube Made? by James R. Wilkins
(5) Antique Radio Tube Substitution by J. W. F. Puett

(6) SILVER GHOSTS by J. W. F. Puett (History of E. H. Scott) $8.95
(7) THE CLASSIC RADIO COLLECTORS HANDBOOK by J. W. F. Puett $10.00
(8) THE APPRAISAL OF ANTIQUE RADIOS by J. W. F. Puett $4.95
(9) The PUETT ELECTRONICS Super Antenna - Ground System Plans $2.00
(10) Cross Reference List of Military vs. Commercial Tube Type Numbers $1.00

See listing for Encyclopedia and Directory on this page.

SCHEMATIC DIAGRAMS

WE HAVE SCHEMATICS FOR NEARLY ANY ANTIQUE RADIO RECEIVER! Send name of manufacturer & model number of set - $1.50 postpaid. Without name of mfg. and/or model No. we will search our files for $3.00, but we must have a sketch of top of chassis showing type numbers and location of all tubes and location of front panel & dial.

APPRAISAL

WE OFFER THOROUGHLY DOCUMENTED APPRAISALS FOR INSURANCE PURPOSES. Many insurance companies offer special antique insurance policies which cover items which have been properly appraised. SEND ONE FIRST CLASS MAIL STAMP FOR OUR APPRAISAL BROCHURE.

ANTIQUE RADIO TOPICS & THE CLASSIC RADIO NEWSLETTER

THREE PERIODICALS IN ONE!!! YOU GET ALL THREE!!!

ANTIQUE RADIO TOPICS --- THE CLASSIC RADIO NEWSLETTER
THE ANTIQUE RADIO NEW ACQUISITIONS LIST

SEND FOUR FIRST CLASS MAIL STAMPS FOR A SAMPLE ISSUE. PUBLISHED TEN TIMES PER YEAR. ALL SUBSCRIBERS RENEW IN JANUARY OF EACH YEAR. PLEASE WRITE FOR OUR SUBSCRIPTION RATES. CLASSIFIED ADS ARE FREE! WHEN PUETT ELECTRONICS HAS RARE TUBES TO SELL (WD-11, 99, 01A, etc.), OUR SUBSCRIBERS HAVE THE FIRST OPPORTUNITY TO PURCHASE THESE THROUGH THE ANTIQUE RADIO NEW ACQUISITIONS LIST WHICH IS SENT TO SUBSCRIBERS ONE WEEK BEFORE IT IS MADE AVAILABLE TO OTHER CUSTOMERS.

MARCH 75¢

THE HORN SPEAKER

1980

Illustrated: Westminster Model - with television, AM-FM radio, automatic phonograph. Cabinets designed by Herbert Rosengren.

LEE A DAVIS
20102 NO. TAPPS HWY.
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